

Application No.: 10/608,300

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Docket No.: 509982005500

**REMARKS**

In the Office Action mailed on March 30, 2005, the Examiner rejected claims 1-29 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,650,422 (the Singh reference). Independent claims 1, 16, and 22 have been amended to correct typographical errors. Applicants respectfully request reconsideration of the pending claims in view of the following remarks.

**I. Claim 1**

In rejecting claim 1, the Examiner cited to column 9, lines 7-12 of the Singh reference as disclosing, "obtaining a second diffraction signal using a machine learning system." Applicants note that claim 1 actually recites "obtaining a second diffraction signal generated using a machine learning system." Applicants assert that the "data set" disclosed in this cited portion of the Singh reference is not generated by the neural network disclosed in Singh. In fact, the "data set" used as an input to the neural network is obtained from an ellipsometer or reflectometer.

In particular, section 9, lines 7-10 of the Singh reference disclose that a neural network is trained using a database of signatures associated with known feature profiles. Section 8, lines 52-58 disclose that the sets of signatures are sets of phase and intensity as a function of wavelength when an ellipsometer is used to characterize a feature profile. Section 8, lines 59-63 disclose that the sets of signatures are reflectance intensity as a function of wavelength when a reflectometer is used to characterize a feature profile. Thus, sets of signatures in the database are obtained using an ellipsometer or reflectometer. Thus, the sets of signatures are not "generated using a machine learning system."

Section 9, lines 10-13 disclose, "a data set associated with a feature under analysis may then be put into the trained neural network [which was trained using the database of signatures described above]." First, note that the data set (i.e., a signature) is used as an input to the trained neural network (i.e., the data set is put into the trained neural network). Thus, it is illogical to conclude that the data set is generated by the neural network. Second, consistent with the description of data sets (i.e., sets of signatures) in the database, the data set associated with a feature

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under analysis is obtained using an ellipsometer or reflectometer. Thus, the data set is not generated "using a machine learning system."

The Examiner also cited to column 2, line 67 and column 3, lines 1-3 as disclosing "comparing the first and second diffraction signals." Note that claim 1 recites comparing a first signal that was measured using a metrology device to a second signal generated using a machine learning system. In contrast, column 2, line 63 – column 3, line 7 simply discloses that a reflection data is compared with a database of reflection signatures. This cited section does not disclose that reflection data or the reflection signatures were generated using a machine learning system.

Thus, Applicants assert that the Singh reference does not disclose obtaining a first diffraction signal measured using a metrology device, obtaining a second diffraction signal generated using a machine learning system, and comparing the first and second diffraction signals. Therefore, Applicants assert that claim 1 is allowable over the Singh reference.

## **II. Claims 2-15**

Applicants assert that claims 2-15 are allowable for at least the reason that they depend from an allowable independent claim.

## **III. Claims 16-21 and 22-29**

Applicants assert that claims 16-21 and 22-29 are allowable for at least the same reasons as set forth above for claims 1-15.

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**IV. Conclusion**

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, Applicants petition for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 509982005500. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: June 30, 2005

Respectfully submitted,

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